FY09 NextGen Portfolio

Federal Aviation Administration

Reduce Weather Impact – Weather Observation Improvements

Date: **December 2008**

Overview

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Project Capability

- **RWI Weather Observation Improvements addresses eliminating the gaps, inaccuracies, and inconsistencies in aviation weather observations. This includes:**
  - Determine the right sensor mix among ground, airborne, and other sensing sources to provide a more complete, consistent, and cost effective measurement of the atmosphere
  - Focuses on an aviation weather sensor network that provides the spatial and temporal resolution needed to improve the quality of current and forecast weather impact information for all operational decision makers and satisfy NextGen aviation requirements.

Project Smart Sheet

• Project Description

RWI Weather Observation Improvements addresses eliminating the gaps, inaccuracies, and inconsistencies in aviation weather observations.

• Problem/Performance Gaps

- Lack of coverage in portions of the airspace
- Lack of temporal and spatial resolution in obs
- Radar network inconsistency across domains (redundancy, varying coverage patterns, multiple data standards)

• Solution

- Determine the right sensor mix among ground-based, airborne, and satellite atmospheric-sensing networks
- Improve spatial and temporal resolution of weather sensor network

Support to Goals

- FAA Strategic Goal – Greater Capacity
  - – Increase reliability and on-time performance of scheduled carriers
  - – Increase capacity to meet projected demand and reduce congestion

• Interdependencies

- FAA sensor legacy programs
- NNEW (4-D Weather Data Cube)
- Aviation Weather Research Program
- RWI Weather Forecast Improvements
- Weather Technology in the Cockpit
- FAA NextGen Solution Set Requirements for weather information integration

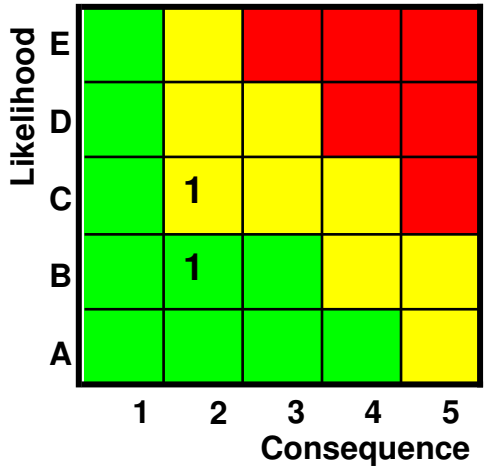
Project Schedule (FY '09)

Description	S	O	N	D	J	F	M	A	M	J	J	A	S
Wx Radar Replacement Technology Research Plan							△						
Update Enterprise Architecture Products												△	
Right-sizing Sensor Network Master Plan													△

Project Schedule (FY '10)

Description	S	O	N	D	J	F	M	A	M	J	J	A	S
Wx Radar Replacement RFP for tech demo white paper													△
NextGen Weather Transition Plan for Sensors										△			
Study for Midterm Segment of NextGen for Weather Observation Systems											△		
Preliminary OMB-E300 update pPR and BCAR (OMB-E300 attachment 1 and 2)											△		
Demonstration and Evaluation Plan for Optimizing Airborne Weather Observations												△	

Project Risks (Preliminary)



Risk Level	Description	Impacts	Mitigation Strategy
C-B2	Cost estimates for right-sizing national observational system for NextGen may be underestimated	Observation network sub-optimized for NextGen	Additional research to better identify observational gaps
C-C2	Phased Array Radar technology may not be cost effective for NAS-wide deployment	Current gaps in radar coverage persist into NextGen	Research into new component technology to reduce component cost

T, S, C: Technical, Schedule, or Cost

Project Details

- **Phase 1**
  - Right-sizing sensor network analysis
  - Preliminary prototype specification and research plan for NextGen weather radar replacement
- **Phase 2**
  - Perform gap analysis and formulate transition plans to NextGen ground sensor network
  - Identify new sensor technology to fill gaps in coverage
  - Develop multi-function weather radar replacement prototype
- **Phase 3**
  - Deploy NextGen consolidated ground sensor network
  - Deploy NextGen Wx Radar replacement system

Project Details (cont.)

- **What are the related projects/programs?**
  - NNEW enables universal access to improved sensor data
  - Aviation Weather Research Program and RWI Wx Forecast Improvements develop new weather capabilities which may require new sensor improvements
  - WTIC develops aircraft as a node technology which may include improvements in sensors for in-flight use
  - NextGen automated decision support tools may require improvements in the observation sensor network

Project Details (cont.)

- **What system dependencies exist?**
  - Service units, NAS users provide NextGen observation performance requirements
  - FAA NextGen Solution Sets will provide requirements for weather information integration
  - Interagency cooperation and planning, including NWS, DoD
- **What system requirements will be developed?**
  - NextGen weather observation specification in terms of coverage, spatial resolution, accuracy, latency, and update rate
- **What other activities are required to reach implementation?**
  - NNEW required to provide universal net-enabled access to improved observations

Resources

- **FAA Personnel**
  - NNEW, AWRP government FTEs; service unit personnel from ATO-E, ATO-R, ATO-T; System Engineering, WHJTC
- **Other Government Personnel**
  - NWS, DoD
- **Contract Personnel**
  - Wx Support, BCI, FFRDCs (MITRE, NCAR, MIT/LL)
- **Challenges**
  - Intra/Inter Agency coordination for determining NextGen weather observation requirements

Acquisition Status/Requirements

- **Existing Contracts**
  - DTFAWA-06-X-00015; MIT LL;5/1/2006-6/30/2011; Warren Fellner;
- **New Contracts**
  - “Weather Support” (WJHTC); 3/1/2009-3/1/2014; Colleen Horan;

FY ’09 NextGen Implementation Plan Commitments

- **FY ’09 Major Milestones to be reported in the NextGen Implementation Plan**
  - Develop right-sizing sensor network master plan
  - Develop Wx Radar replacement technology research plan
- **NASEA Decisions supported (v2.8A1)**
  - Investment Analysis Readiness Decision for ASOS/AWOS/AWSS (DP#141, 2011)
  - Final Investment Decision to consolidate surface observing systems (DP#85, 2014)
  - Investment Analysis Readiness Decision for Wx Radar replacement (DP#84, 2016)
  - Final Investment Decision for Wx Radar replacement (DP#342, 2020)
- **Deliverables/Products**
  - Right-sizing sensor network master plan, Wx radar replacement technology research plan
- **Funding Request**